REVIEWS OF HEALTH RESEARCH – REQUEST FOR PROPOSALS

Summary

Applicants with a scientific PhD (or equivalent) and current or recent research and publication experience in an area of human disease, in the academic, private or public sectors, are invited to tender for one of three grants now on offer.

Each grant is available to prepare an in-depth narrative review of current research approaches to a disease area, critically assessing the value and limitations of animal models in health research and drug discovery (not toxicology) and proposing a new 'roadmap' for future research; to publish the review in a peer-reviewed scientific journal; and to contribute to dissemination of the work. The roadmap for research in each disease area will focus on understanding disease pathways in human biology-based models mainly using novel and emerging research tools of the 21st century.

Applicants should read the documents and other information associated with this Request for Proposals which, as well as the Application Form, can be found online at HumaneSocietyUniversity.org/diseasemodels

Deadline for submission of proposals: Midnight EST on 15 October 2013.

Funding organisation: Humane Society International.

Grants available

Three grants are available. Each grant will be in the range US $8,000 - $10,000 (or equivalent in other currencies), depending on the relevant experience, expertise and seniority of the successful applicants ("consulting scientists"). The grants are for writing in-depth critical narrative reviews and publishing them in peer-reviewed scientific journals; presenting the work at two major conferences; and participating in a scientific workshop and contributing to the preparation of workshop proceedings for publication.

Additional grants may be available for further dissemination.

Alzheimer's and Parkinson's diseases, addiction, obesity, diabetes, motor neuron disease/amyotrophic lateral sclerosis, stroke and asthma are **excluded** as topics for review in this Request for Proposals, but other disease areas are eligible.

Background to this project

Health research aims to discover the causes of human illness and to discover effective treatments, but the returns on today's investment are becoming harder to see. The average time and cost to develop a drug continue to escalate, yet fewer new medicines reach the market [1,2].

Among other issues, a key limitation is the inability of animal models to sufficiently reflect human disease [3,4], leading to extensive failures in translation and costly late-stage attrition [5]. The existing health research framework is highly dependent on animal studies, both conceptually and in practice. While animal research has provided useful data about some

pathologies, translational success has been elusive and costly late-stage drug failure is very common in many disease areas [6-10].

The problem is recognised by researchers, pharmaceutical companies and regulatory authorities, inspiring the Innovative Medicines Initiative in Europe, the Critical Path Initiative in the United States, and other similar efforts to overcome scientific bottlenecks, improve success and reduce the costs, time to market and overall waste associated with the current approaches.

There is an urgent need for the scientific community to critically re-assess the value of animal models in health research and drug discovery [11], and to consider whether the new tools of the 21st century, applied to human biology-based models, could do better.

For these approaches to achieve their full potential, HSI believes a new paradigm is needed in health research: one that is focused on human biology. A similar transition is already under way in chemical toxicology, where human-specific *in vitro* and systems approaches are being put centre-stage, in place of traditional animal testing [12, 13]. The paradigm change in toxicology is supported by unprecedented multinational scientific efforts and resources, and provides a possible template for such a transition in health research with likely medical, scientific and economic benefits.

The three reviews now being commissioned by HSI will critically evaluate the contributions and limitations of animal-based models of human diseases, and identify opportunities for progress through the application of 21st-century paradigms. The intention is that publication and dissemination of the reviews, following others already published by HSI or currently in preparation, will help start this debate in the scientific and funding communities.

Project description

The three in-depth critical narrative reviews will each evaluate the role and validity of animal models for researching a human disease and novel drug targets (not toxicology) and identify opportunities for better progress in understanding human disease and translation to the clinic, using modern, human-specific tools and technologies.

21st-century models and tools relevant to human biology include:

- Identification of disease pathways and networks based on human gene, protein and cell interactions [e.g. 14, 15]
- Advanced clinical research (e.g. using imaging techniques or metabolic labelling)
- Genome-wide association studies and related approaches
- Human *ex vivo* tissue studies
- Sophisticated *in vitro* models with patient- and disease-specific cells, including human induced pluripotent stem cells [16]
- High-content analysis microscopy, the 'omics, next-generation sequencing, microfluidic and lab-on-chip approaches, high-throughput tests
- Systems biology and computational models of human systems

Non-human animal models (vertebrates and invertebrates) will not feature in the roadmaps for future health research, as HSI believes that human biology-based approaches are the gold standard for the future.

Alzheimer's and Parkinson's diseases, addiction, obesity, diabetes, motor neuron disease/amyotrophic lateral sclerosis, stroke and asthma are **excluded** as topics for review in

this Request for Proposals, but other disease areas are eligible. They will be prioritised on the basis of the following criteria:

- The value of currently used animal models (for researching pathology and drug targets, and in translation to the clinic)
- The feasibility of constructing a draft 'roadmap' for this research based mainly on contemporary, human biology-based models and technologies
- The impact of the illnesses on human health

We are looking for scientists with:

- a scientific PhD (or equivalent) and
- current or recent research and publication experience in an area of human disease
- from the academic, private or public sectors
- located anywhere in the world

Consulting scientists will be responsible for:

- Independently researching and writing a critical scientific review according to the Project Description, and publishing the manuscript in a peer-reviewed scientific journal
- Presenting the results of the publication at two relevant scientific conferences
- Participating in a scientific workshop aimed at developing consensus recommendations, plus contributing to the preparation of workshop proceedings for publication

There may also be funding available for further dissemination of the results to scientific funding bodies, charitable health foundations, patient groups and the media.

Key dates

Application process opens	1 September 2013
Deadline for online applications	Midnight EST on 15 October 2013
Notification of successful candidates	15 November 2013
Publication of reviews	By end of 2014
Presentations at two scientific conferences	By end of 2015
Participation in a scientific workshop	By end of 2015
Publication of workshop proceedings	Early in 2016

Application process

Application forms and all related documents and information are available online at HumaneSocietyUniversity.org/diseasemodels

Eligible individuals (in the academic, private or public sectors anywhere in the world) will have a scientific PhD (or equivalent), and current or recent research experience that is relevant to the disease area they propose to review.

The available grants for consulting scientists will depend on their relevant experience, expertise and seniority. The range is US $ 8,000 - 10,000 (or equivalent in other currencies).

Payment will be made in three instalments, in arrears, as follows: A lump sum representing one-third of the total awarded shall be payable upon completion of a review to the satisfaction of HSI; one-third shall be payable upon acceptance for publication by a peer-reviewed scientific journal; and the remaining one-third shall be payable upon completion of the dissemination activity to HSI's satisfaction.

The award of grants is subject to consulting scientists signing a standard agreement with Humane Society International, which can be viewed on our website.

All applications shall be made by downloading and completing the online Application Form which must be attached as a Word document to an application email sent to glangley@hsi.org **by midnight EST on 15 October 2013.**

Enquiries

Please direct all enquiries to Dr Gill Langley, HSI Senior Scientific Advisor, at glangley@hsi.org

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